

REMARKS

File History

In the Final Office action of 7/13/2007, the following rejections appear to have been repeated:

- > Claims 1-15, 21-23, 24 were rejected under 35 USC §103(a)/102(e) as being obvious over You (US 6,706,613) in combination with Wang (US Pub 2005/0110102 published 5/26/05 on basis of application filed 11/25/03). Reference was also made to Fujimoto (US 6,830,973) and to Xing (2003/0124873) as part of the justification for rejection.
- > Claims 11, 26 and 27 were rejected under 35 USC §112 as lacking written description support. (No art was applied against claims 26-27.)
- > Claims 25 and 28 were indicated to contain allowable subject matter.
- > Additionally, the Examiner clarified the PTO's position regarding the 112 rejections and the 103 rejections.

Appreciation for Examiner Explanations

Applicant thanks the Examiner for taking time to clarify the §112 rejections and for also expressing the current PTO position regarding the §103 rejections.

With regard to the §112 rejections, it was not clear from the earlier Office action that there were actually three separate rejections. The Examiner made that clearer in the present office action. Applicant would like the opportunity to respond now that it has been made clearer in this Office Action.

With regard to the §103 rejections, it appears that Applicant and the Office have reached an impasse. However perhaps this is not necessarily a final impasse. It is respectfully requested that the Examiner indulge Applicant one more time and reconsider the case, at least for a moment, from an alternate point of view.

1) Response After Final to First §112 Rejection

If understood correctly (and perhaps if not, in which case the Examiner's clarification is respectfully requested), the PTO appears to take the position with regard to method Claim 11 ("and further wherein: said ONO-type memory cell stack does not include a metal silicide layer" [*Emphasis added*]) that the written description of every patent regarding a method involving a chemical process taking place in a physical environment (that of the claim-defined, "ONO-type memory cell stack") must provide an explicit listing of all things that are excluded during the carrying out of the chemical process. In other words, rather than positively showing what the ONO-type memory cell stack does include as is done in Fig. 3A, the PTO position is that patent law requires Applicant to explicitly list all the things it does not include. The PTO position is that; if such an exclusionary list is not provided, Applicant is precluded from noting in the claim that the illustrated ONO-type memory cell stack does not include a metal silicide layer even though it is an indisputable fact that the illustrated ONO-type memory cell stack in Fig. 3A does not include a metal silicide layer and a person of ordinary skill would see this to be the fact.

Moreover, the PTO appears to take the position that an understanding by those skilled in the art that metal silicide should not be present when hydrogen is being used in the flow gas (as is established by the Rule 132 Declaration) is insufficient to demonstrate that Applicant was in appreciative possession of that understanding as well, this being so even though it is an indisputable fact that the illustrated ONO-type memory cell stack in Fig. 3A does not include a metal silicide layer.

It is respectfully submitted that this position --as Applicant sees it-- does make reasonable sense. It is impractical to list for every method, all the things that should *not* be included.

It is well established law that the drawings constitute part of the written description. See Cooper Cameron Corporation v. Kvaerner Oilfield Products 291 F.3d 1317, 1323, 62 USPQ2d 1846 (Fed. Cir. 2002). It is an indisputable fact that the

illustrated ONO-type memory cell stack in Fig. 3A does not include a metal silicide layer. Reconsideration is requested.

2) Response After Final to Second §112 Rejection

If understood correctly (and if perhaps not, in which case the Examiner's clarification is requested), the PTO appears to take the position with regard to Claim 26 ("constrained to below a volumetric flow ratio of H_2 to O_2 at which formation of a hydrogen flame due to the presence of H_2 is at least unstable if not that the flame is extinguished or unignited due to insufficient presence of H_2) that the specification as filed fails to provide support for this.

It is undisputable that paragraph [0040] of the specification states:

As used herein, the so-called, thermal oxidation with a wet combination of O_2 and H_2 refers to a process where a supplied stream of H_2 is burned (made to produce an invisible flame) in the presence of flowing O_2 to thereby form high temperature water vapor (H_2O) where the volumetric flow ratio of H_2/O_2 (each in terms of sccm) is in the range of 1.0 to 1.8. It is outside of conventional, mass-production practice to reduce the H_2/O_2 volumetric flow ratio below this range (more specifically, below 0.3) because the flame may become unstable at lower values of the ratio.

What appears to be in dispute though, is how a person of ordinary skill in the art would read this text and what inferences such a person would take away from it. Applicant respectfully submits that a person skilled in the art would understand that if the H_2/O_2 ratio is zero (0), that there can be no flame because there is no hydrogen present to be burned. Applicant respectfully submits that a person skilled in the art would understand that if the H_2/O_2 ratio starts off in the conventional range of 1.0 to 1.8 where the flame has been ignited (the hydrogen fire was started) and the H_2/O_2 ratio is reduced continuously until it is zero (0), there will be a value where the flame starts to become "unstable" and a lower value where the flame finally goes out. The concept of there being

a value where the flame is "unstable" is clearly presented in specification paragraph [0040] as shown above. The concept that the flame will be extinguished as the H₂/O₂ ratio is reduced continuously until it is zero (0) is inherent and did not have to be spelled out for those skilled in the art. Thus a person skilled in the art will readily understand that Applicant was in appreciative possession of the idea of using a low H₂/O₂ ratio where "formation of a hydrogen flame due to the presence of [the low relative amount of] H₂ is at least unstable if not that the flame is extinguished or unignited due to insufficient presence of H₂". Extinction of the flame is inherent as the H₂/O₂ ratio is reduced below the flame instability and towards being essentially zero (0). The specification clearly mentions being "below" the conventional range.

3) Response After Final to Third §112 Rejection

If understood correctly (and if perhaps not, in which case the Examiner's clarification is requested), the PTO appears to take the position with regard to Claim 27 ("is constrained to below a volumetric flow ratio of H₂ to O₂ at which stable ignition of a hydrogen flame due to the presence of H₂ is assured on a mass production basis") that the specification as filed fails to provide support for this. However, it is undisputable that paragraph [0040] of the specification states (repeating from the above with emphasis added): "It is outside of conventional, mass-production practice to reduce the H₂/O₂ volumetric flow ratio below this range (more specifically, below 0.3) because the flame may become unstable at lower values of the ratio". It is respectfully submitted that this passage provides adequate support for Claim 27. Reconsideration is respectfully requested.

4) Response After Final to Examiner's Response to Arguments re "for example"

If understood correctly (and if perhaps not, in which case the Examiner's clarification is requested), the PTO appears to take the position with regard to the You '613 language: "for example a dry oxidation process" that a person of ordinary skill in the art would interpret this passage to mean, "I the ordinary artisan can use any of an infinite number of different oxidation processes as I please while the stated one-and-only example of "dry" oxidation is merely a nonbinding suggestion which I can readily choose to ignore," --to sort of paraphrase the thought process of the hypothetical artisan.

The PTO challenges Applicant's assertion with regard to the You '613 language: "for example a dry oxidation process" that a person of ordinary skill in the art would interpret this passage to mean that dry (no hydrogen) oxidation must be used. Applicant respectfully re-asserts that, yes, the person of ordinary skill in the art would interpret this passage to mean that dry (no hydrogen) oxidation must be used.

Interpretation of a prior art document is an issue of fact. Prior art documents must be interpreted through the eyes of a skilled artisan at the relevant time and not through the eyes of an unskilled layman. Al Site Corp v. VSI International 50 USPQ2d 1161 (fed, Cir. 1999) (In the first place, the level of skill in the art is a prism or lens through which a judge or jury views the prior art and the claimed invention. This reference point prevents these deciders from using their own insight or, worse yet, hindsight, to gauge obviousness.)

Of course, an untrained layperson may easily say to himself: "Oxidation is oxidation, what's the difference? One is like the next." But this is where the insight of the skilled artisan overshadows the simple mindedness of the unskilled layperson. Oxidation is not just another word. There all sorts of nuances and fine points to oxidation as has been made clear in the record of the present prosecution by way of the Rule 132 declaration and by way of attorney arguments.

The PTO appears to emphasize the "for example" part of You '613's language: "for example a dry oxidation process" as controlling over all evidence to the

contrary. The PTO appears to see many possibilities opened up to the ordinary artisan by You's silence; by the fact that You '613 does not come out and explicitly say, "Warning, do not use anything but dry oxidation." This denies the realities of the patent drafting process. Persons skilled in the art understand that patents are generally drafted by attorneys and not directly by the engineers/scientists. You '613 clearly shows on its front cover page that a law firm was involved in its prosecution. This is a fact. No reasonable attorney/law firm will readily allow their client to write in a patent application, "Warning, do not use anything but dry oxidation." They will almost always push the inventors/engineers/scientists to include hedge language such as, "for example". If indeed there were other viable alternatives to "dry" oxidation, You et al. could have easily provided one or more such examples to their attorneys. But they didn't. And the reason is because, technically speaking, there is none. The Rule 132 Declaration of record provides undisputed evidence that the skilled artisan would not use anything other than dry, hydrogenless oxidation due to the presence of the metal silicide in You's structure. The patent examination process should be one based on science, on the realities of real world chemistry, and not on playing word games. It is respectfully submitted that the person of ordinary skill would assign different weights to different parts of a patent document based on the knowledge that some artisans are more credible, more precise with their language and more authoritative than others. The words "for example" would be heavily discounted in this particular instance. Patent attorneys are not scientists. There are untold numbers of issued patents in the semiconductor field where clearly the attorney who wrote the text did not know the difference for example, between "thermally growing" oxide and "depositing" oxide, although in most instances the two are not at all the same. The person of skill in the art generally knows when a portion of a patent is being filled in with attorney misinformation (often unintentional misinformation due to the attorney's technical ignorance) rather than with an artisan's knowledgeable provision of useful information. The "for example" in You's disclosure would be seen as mere puffery; as just smoke and mirrors put in there at the instance of a patent

attorney who did not want the disclosure to appear to be too limiting. However, a person skilled in the art would understand that in the particular case of You '613, it must be so limited. There is no other viable oxidation process disclosed. The only process disclosed and taught is "dry" oxidation and for good reason.

A person skilled in the art would read You '613 as teaching away from use of anything but dry oxidation. This established in the Rule 132 of record.

In light of the above, it is respectfully submitted that the ordinary artisan would heavily discount the "for example" language of You '613 and would view You '613 as teaching away from use of anything but dry oxidation.

5) Response After Final to Examiner's Response to Arguments re motivation to combine

Exactly one week after Applicant's last response was filed (4/23/2007), the US Supreme Court handed down its KSR v. Teleflex decision (on 4/30/2007). Much mischief is expected to arise from the KSR decision and the various interpretations of what it allows the PTO to do in formulating an obviousness rejection.

One thing that KSR did not do, is open the door for the PTO to ignore "away" teachings. It is still the law that when one of two references teaches away, the combination cannot be made. The Rule 132 of record establishes that You '613 would be seen by an ordinary artisan as teaching away from using anything but "dry" oxidation, in spite of insertion of the artful "for example" language in its text.

Additionally, after KSR, a new class of "common sense" decisions have been handed down by the Board of Appeals. One of them indicates that in cases where the prior art already provides a solution for a known problem (i.e. Bird's Beak) the "common sense" of the ordinary artisan would tell him to use the known solution rather than to go hunting for untested alternate solutions. See

explicitly: Ex parte Rinkevich, Appeal 2007-1317, Application 09/731,623, Decided: May 29, 2007 ("Nevertheless, in KSR the Supreme Court also qualified the issue of hindsight by stating that "[r]igid preventative rules that deny fact-finders recourse to common sense, however, are neither necessary under our case law nor consistent with it." KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 82 USPQ2d at 1397. In the instant case, we conclude that a person of ordinary skill in the art having common sense at the time of the invention would not have reasonably looked to Wu to solve a problem already solved by Savill." [*Emphasis added.*])

In the instant case, You '613 provides a solution, namely to nitridate the surfaces of the ONO sidewalls so that no sidewall layer remains exposed during the subsequent dry oxidation but rather so that the nitride protectively coats all the layers against differential oxidation rates. This aspect is also discussed in the Rule 132 of record and remains unrebutted. You '613 teaches away from having exposed surfaces.

In the latest, Final Office action, the PTO appears to take the position that Applicant has not rebutted the proffered motivation: "a dry ISSG provides excellent thickness control and the thermal budget can be reduced". This position, namely that Applicant has not contested the assertion, is not true.

At paragraph 4e, the Rule 132 stated:

[returning] to the Patent Office's reasoning as quoted and highlighted in above paragraph 4a (namely, that the motivation to use dry ISSG is because "a dry ISSG process provides excellent thickness control and the thermal budget can be reduced" (OA page 3, referring to Wang Abstract, emphasis added). **In my professional opinion this statement is technically incorrect and without basis** in Wang '102. Wang never promises or suggests that a "dry" version of his ISSG process will provide excellent thickness control for every situation. Moreover, a "dry" ISSG that does not have enough hydrogen flow to sustain a stable hydrogen flame will tend to increase consumption of the thermal budget rather than decreasing it. (This is so because the hydrogen flame provides localized exothermic heat, and without the flame, a non-local source of heat will probably have to be used (i.e., Rapid Thermal Heating lamps) and this will tend to hurt rather than help the thermal budget of the overall chip. More on this detail later.) With regard to universal applicability of ISSG to all situations, Wang's Abstract limits itself to saying: "Exposing the patterned

silicon nitride to the oxygen radical during the RTO according to the invention significantly reduces the processing time, and reduces the thermal budget." Wang does not teach or suggest a universal applicability of his method. I could not find any instance where Wang mentions the word "excellent" or associates the "dry" end of his ranges with good thickness control or thermal budget reduction.

In view of the above, there is ample reason to withdraw the rejection as being based on an improper motivation statement; one that has been rebutted by expert testimony. Moreover, it is respectfully asked of the Examiner to carefully review the Rule 132 Declaration that forms part of the administrative record. The declarant, Mr. Chen is hardly a lightweight in the field. He has a PhD degree in chemistry. He co-authored a number of professional papers in the field. He is a named co-inventor on a number of patents issued in the field. His declaration should not be summarily dismissed.

With regard to summary dismissal of Rule 132 declarations, please See In re Alton, 37

U.S.P.Q.2d 1578, 1582-1584 (Fed. Cir. 1996):

[The] Examiner's final rejection ... contained **two errors: (1)** viewing the [expert's] declaration [respecting the adequate disclosure issue as being merely an] opinion ... addressing a question of law rather than [providing factual testimony pertaining to] a question of fact; **and (2) the summary dismissal of the [expert's] declaration**, without an adequate explanation of why the declaration failed to rebut the [rejection] ... [With regard to item (1), we read the expert's] declaration [as] offering factual evidence in an attempt to explain *why* one of ordinary skill in the art would have understood the specification to describe [adequately the subject matter at question] [With regard to item (2), as the burden of coming forward with arguments and evidence shifts back and forth from first being on the Examiner to present a prima facie case and then to the Applicant to rebut; **after such rebuttal] evidence or argument is submitted by the Applicant in response, patentability [must be] determined on the totality of the record**, by a preponderance of the evidence with due consideration to persuasiveness of argument. ... [In this case, **the Examiner committed error] by failing to articulate adequate reasons to rebut the [expert's] declaration** [which failure means that the PTO has] failed to consider the totality of the record ...

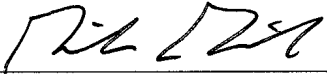
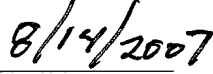
[Emphasis and bracketed text added. Some language skipped over for sake of brevity.]

It is respectfully submitted that, when the totality of weights of "evidence" are placed on the opposing scales of justice in his case (as they should be) and reconsidered with regard to teachings and motivations, the preponderance of evidence clearly tips in favor of a finding nonobviousness and patentability.

CONCLUSION

In light of the foregoing, Applicant once again respectfully requests that the outstanding grounds of rejection be withdrawn and the claims be reconsidered in light of the evidence on record and allowed. Should any other action be contemplated by the Examiner, it is respectfully requested that he contact the undersigned at (408) 392-9250 to discuss the application.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 50-2257 for any matter in connection with this response, including any fee for extension of time and/or fee for additional claims, which may be required.

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